

Non-Compliance with Personal Protective Equipment Regulations in Oregon Agriculture are Common

Kim Faulkner, PhD*, Maryann D'Alessandro, PhD*, John Mendeloff, PhD#, Garnet Cooke†, Ann Haas#

* NIOSH National Personal Protective Technology Laboratory (NPPTL), # RAND Corporation. † Oregon OSHA

Background

Occupational Health Significance of Study

- There are an estimated 19,600 pesticide poisonings each year among US crop workers
- Pesticide exposure increases risk for cancer, adverse reproductive effects, and neurological diseases
- Personal Protective Equipment (PPE) is effective in reducing the amount of pesticide inhaled and absorbed through the skin
- PPE is often the only feasible defense against pesticide exposure and PPE is required by law for many farm workers.



Study Introduction

- The extent to which Agricultural businesses comply with PPE regulations for pesticide exposures is not well characterized
- Oregon OSHA regulates standards for PPE practices in Oregon for pesticide handlers and farm workers
- Pesticide Emphasis Program (Oregon PEP) was launched by Oregon OSHA in 2000
- Comprehensive program includes PPE standard enforcement and proper educational and training resources provided to reduce the risk of exposure

Study Objectives

For Personal Protective Equipment (PPE) use among farm workers in Oregon:

- determine overall and annual rates of PPE violations in Agriculture in Oregon
- characterize types of PPE violations and their frequencies of occurrence
- identify potential predictors of high rates of PPE violations: industry type & establishment size

Methods

Study Sample

- PEP selected establishments at random within 6 major Agricultural industry groups thought to be at potentially high risk of pesticide exposure
 - All establishments were eligible for inspection, including those with 10 or fewer employees, as long as it was not previously inspected within the past 2 years
 - PEP conducted a total 375 programmed inspections over 8 years (200-2007)
 - The analysis sample consisted o the 348 incident inspections within a given establishment

Analysis Sample

- Analysis included data from all 348 establishments
- Reinspection data not included in the analysis

Data Collection

Citations of PPE Violations

- PEP enforced EPA Worker Protection Standard and OSHA federal standards (such as the Respiratory Protection Program beginning in 2007) adopted by OR OSHA in Agriculture
- PPE regulations span PPE selection, PPE use, written respiratory protection program, and PPE training
- PEP inspections were performed and violations cited according to standard procedures by trained officers
- PPE violations involving pesticides were assessed for their seriousness (yes/no).
 - Serious violations included those with higher toxicity levels defined by pesticide label signal words of Warning or Danger or Danger/Poison

Predictors of PPE Violations

- The number of employees was recorded as an assessment of establishment size
- Industry type was determined for all establishments using industry codes recorded. All codes were translated into 4-digit NAICS codes

Data Analysis

We calculated frequency distributions

Results

Table 1. Characteristics of inspections in 2000-2007, N=348

Number of PPE violations of any type, %	
0	64%
1	15%
2	11%
3+	10%
One or more serious PPE violation, %	11%
Number of employees, %	
1-10	55%
11-20	16%
21-30	7%
31+	22%
Major Industry Group, %	
Oilseed and Grain Farming	0.6%
Vegetable and Melon Farming	2.0%
Fruit and Tree Nut Farming	37.9%
Greenhouse/Nursery/Floriculture Production	26.4%
Other Crop Farming	29.9%
Support Activities for Crop Production	3.2%

Table 2. Distribution of the number of PPE violations cited by type (2000-2007), N=126

Types of PPE Violations Cited	%
Partial Written Respiratory Protection Program for Voluntary use not established and implemented (1910.134.c.2.ii)	17.7
PPE was not cleaned (170.240.f.1)	12.1
PPE was not worn according to pesticide label (170.240.a)	9.4
Respirator users were not trained (1910.134.k)	9.4
Written respirator program not developed and implemented (1910.134.c)	9.1
Appropriate respirator not provided when required (1910.134.a.2)	5.7
Respirator cartridges not replaced at the end of the workshift (170.240.f.7.iii)	5.7
Respirators not stored in clean and sanitary conditions (1910.134.h.2.i)	5.3
Written Respirator Program did not have work-site specific procedures (1910.134.c.1)	2.6
PPE stored in pesticide contaminated areas (170.240.f.5)	2.3
Respirators not cleaned (1910.134.c.1.v)	1.9
Appropriate eye protection not provided (1910.133)	1.9
Respirator users not medically evaluated prior to respirator use (1910.134.e.1)	1.9
Chemical resistant apron not provided (170.240.c.8)	1.5
Appropriate hand protection not worn (1910.138)	1.5
PPE Hazard assessment not completed (1910.132)	1.5
PPE not able to be cleaned not disposed of (170.240.f.2)	1.1
Eyewear specified on the label was not worn (170.240.c.7)	0.8
Respirator users had facial hair (1910.134.g.1.i.A)	0.8
Appropriate footwear was not used (170.240.c.6)	0.8
PPE was not carried inside the cab in case exiting the cab was necessary (170. 240.d.5.iv)	0.8
The respiratory program was not evaluated annually (1910.134.l.1)	0.8
For enclosed cabs that offer dermal protection a respirator was not worn when specified by the product label (170. 240.c.5.i)	0.8
Contaminated PPE was taken home (170.240.f.10)	0.8
Based on the hazards, the appropriate respirator was not provided (1910.134.d.1.i)	0.4
Respirator user unable to demonstrate knowledge of receiving respirator training (1910.134.k.1)	0.4
Employer did not provide appropriate PPE in clean & operating condition (170.240.c)	0.4
The gloves in use were not of the type specified on the product label (170.240.c.5)	0.4
Respirator hazards were not identified and exposures evaluated (1910.134.d.1.iii)	0.4
Medical evaluation not included in respiratory protection program (1910.134.c.1.ii)	0.4
The respirator used was not NIOSH certified (1910.134.d.1.ii)	0.4
PPE was not inspected before use (170.240.e.2)	0.4
No person was designated as the respiratory protection program administrator (1910.134.c.3.i)	0.4
Dust/Mist filters were not changed at the end of the workshift (170.240.f.6.iv)	0.4
The written recommendation regarding the employee's ability to wear a respirator was not received (1910.134.f.2)	0.4

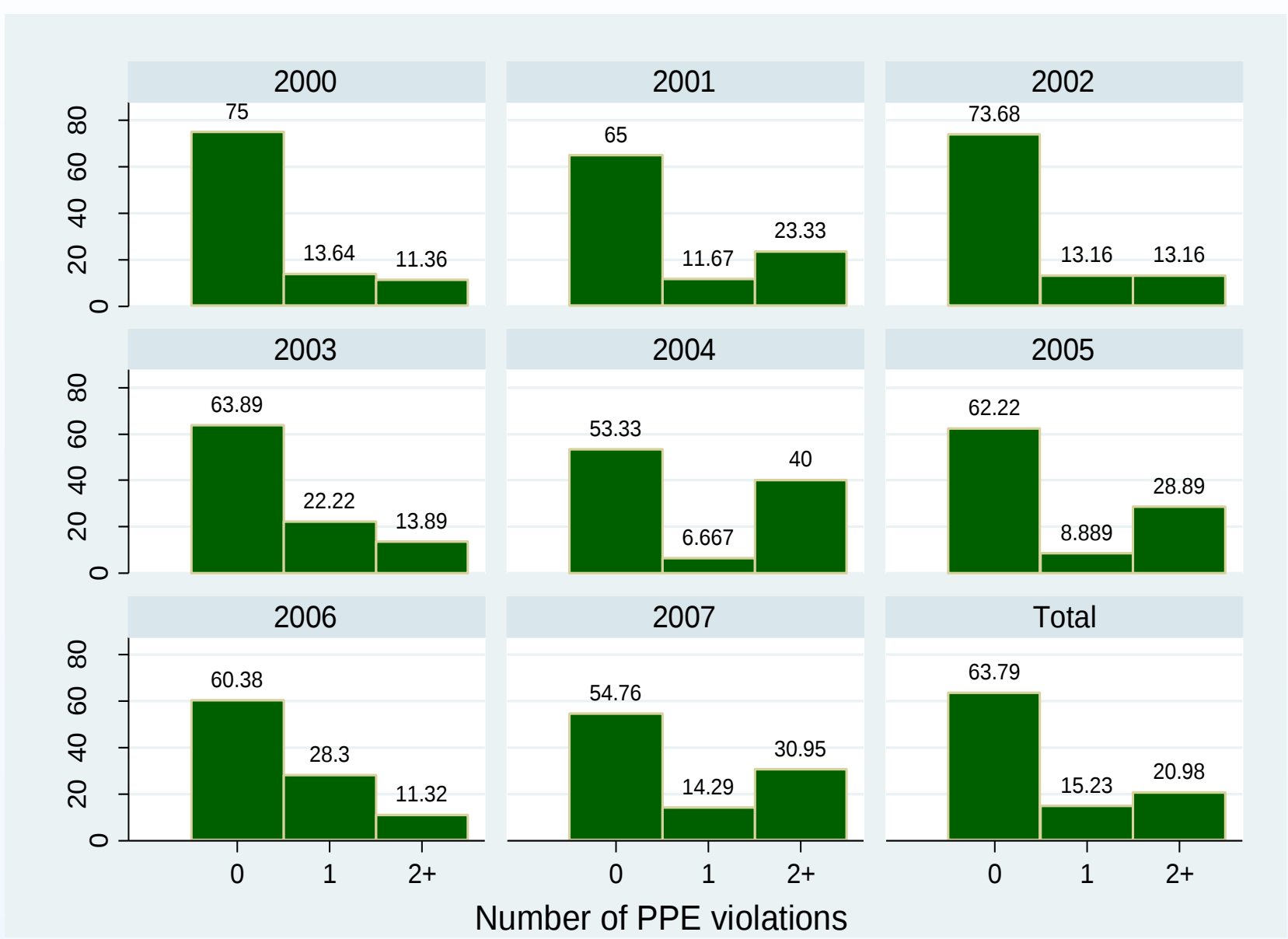


Figure 1 Number of PPE violations, per inspection by year and overall (2000-2008), N=348

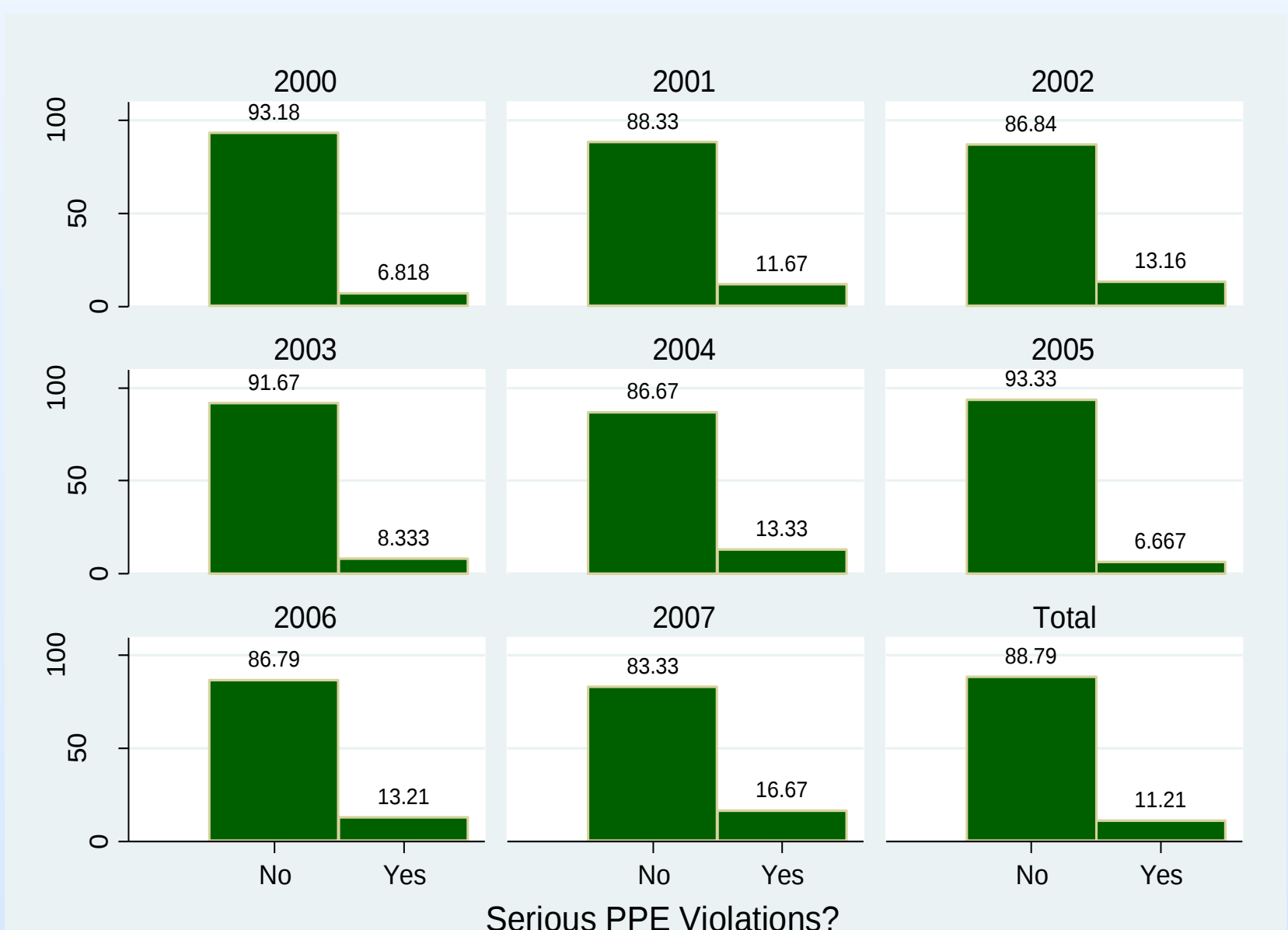


Figure 2 Percent of inspections resulting in one or more serious PPE violations, by year and overall, N=348

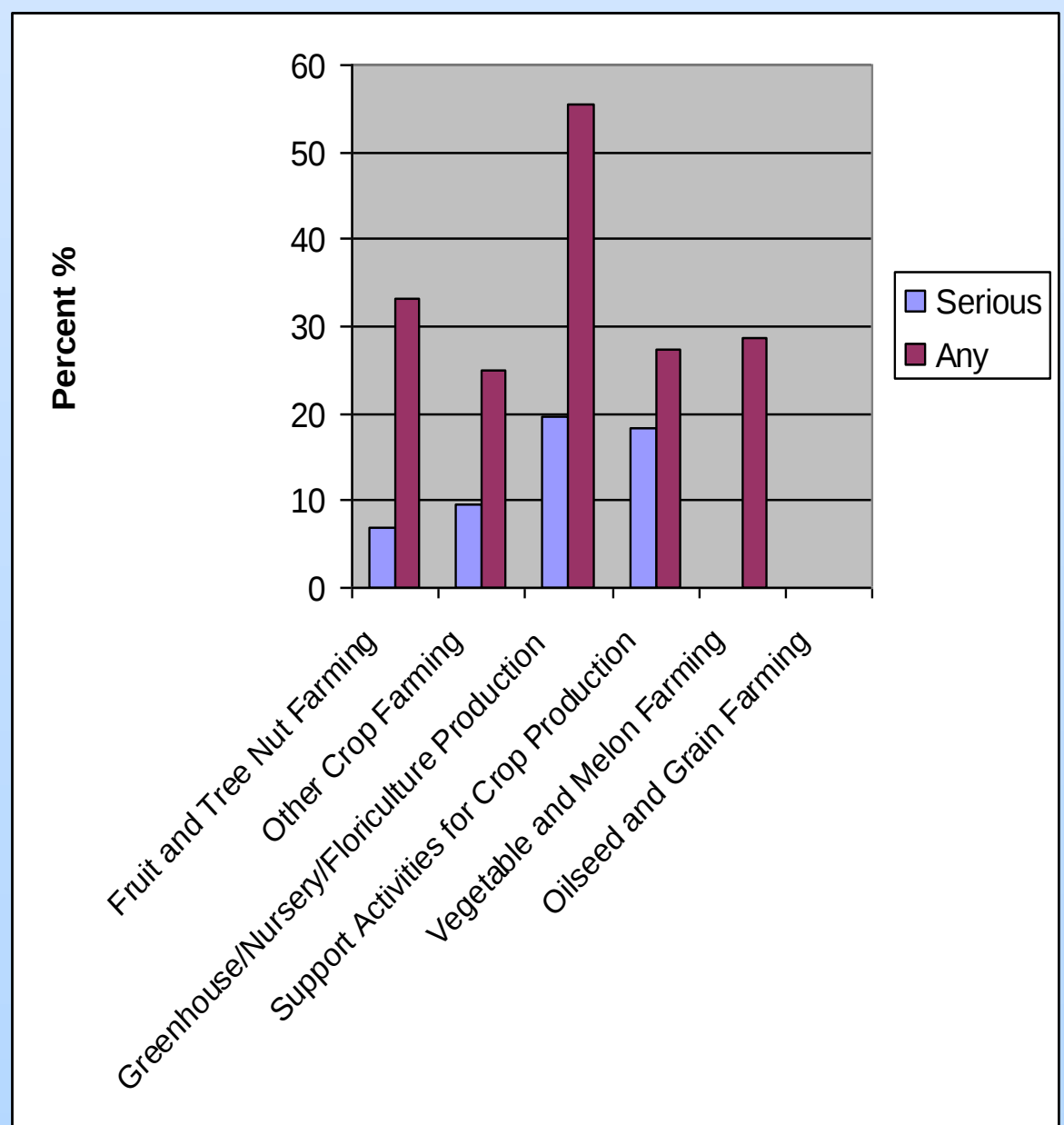


Figure 3. Percent of inspections resulting in any PPE violation and any serious PPE violation according to industry major group, N=348

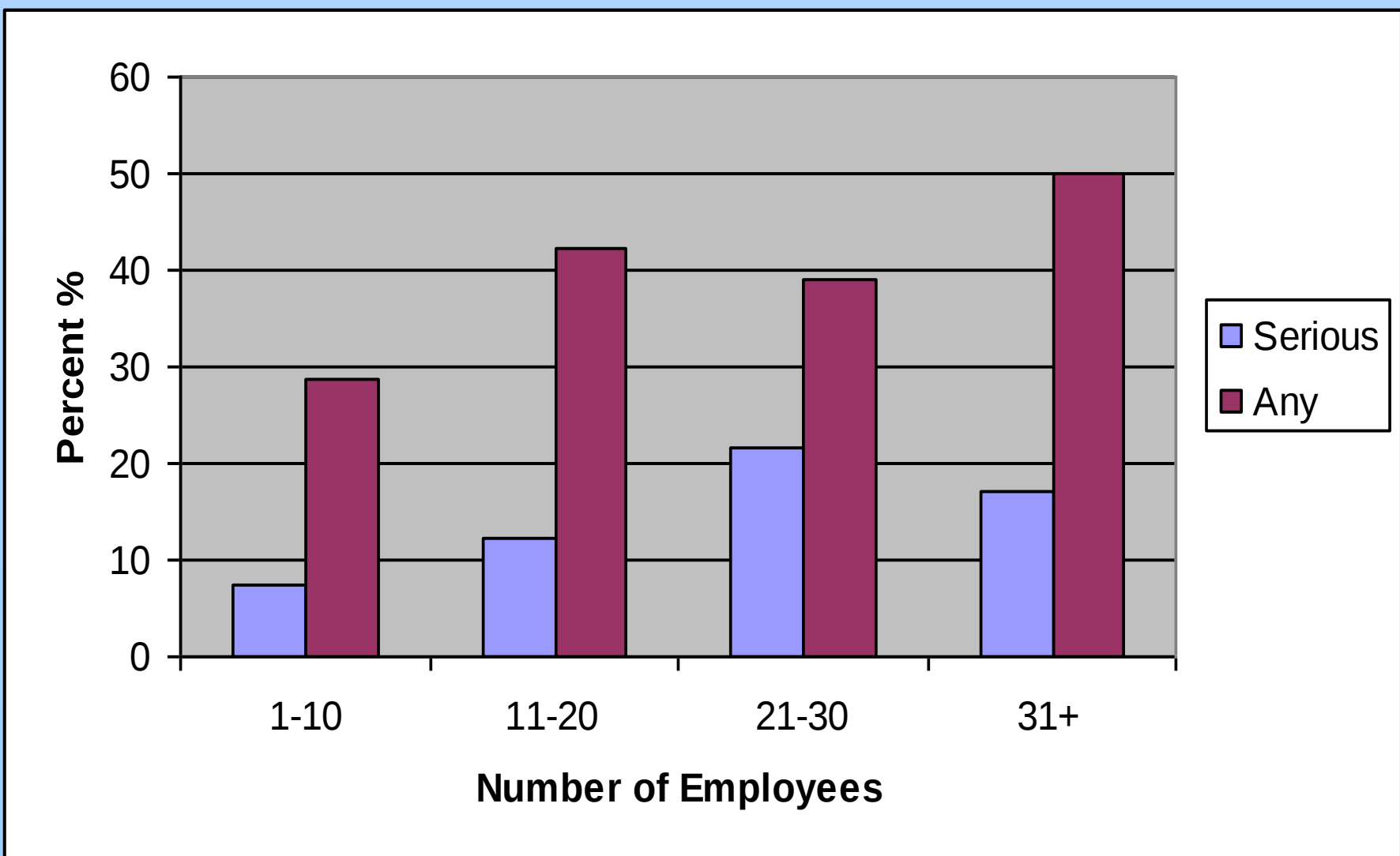


Figure 4. Percent of inspections resulting in any PPE violation and any serious PPE violation according to number of employees, N=348

Summary of Results

- Approximately 1 in 3 inspections resulted in one or more PPE violations, with 10% resulting in 3 or more PPE violations simultaneously
- Approximately 1 in 10 PPE violations resulted in a serious PPE violation
- The most common PPE violations included not providing a Written Respiratory Protection Program and not providing clean PPE
- Of the 6 major industry groups studied, the Greenhouse/Nursery/Floriculture Production group were more likely to have a PPE violation than any other group. They were also more likely to have a serious PPE violation than any other group
- Establishments with 10 or fewer employees had the lowest rates of PPE violations overall and of serious PPE violations
- Visually, larger establishments appeared to have higher rates of PPE violations overall and for serious violations

Discussion

- Non-compliance is common in six major industries in Oregon and it does not appear to be decreasing**
- The most common types of violations are associated with written respiratory protection, cleaning PPE selecting PPE, training for respiratory protection and providing respirators**
- More detail analyses are needed to determine trend for specific industries and specific types of violations**

Strengths

- This study includes eight years of inspection data from several Agriculture industry groups and various establishment sizes

Limitations

- Findings are not generalizable to other States and industries

Conclusion

- Non-compliance with PPE regulations is common in several major Agricultural groups in Oregon some which could have serious health consequences**
- More resources are needed to eliminate the risk of non-compliance and potential illness**
- More research is needed to determine the extent to which increased compliance results in fewer poisonings and decreased exposure**

Stakeholders

- Agriculture workers who use PPE and their employers

Potential Partnerships

- Oregon OSHA
- Department of Labor / Employment and Training Administration
- OSHA
- State-based Surveillance Programs
- NIOSH Agriculture Centers

Acknowledgements

RAND Corporation Contract 200-2004-07601 Task Order 0010

NIOSH Division of Surveillance Hazard Evaluations & Field Studies (DSHEFS); and NIOSH Division of Safety Research (DSR)

Disclaimer: The findings and conclusions in this presentation have not been formally disseminated by the National Institute for Occupational Safety and Health and should not be construed to represent any agency determination or policy.

